



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/990,874

11/21/2001

Wing L. Sung

GOWL-018/00US/306506-2025

2196

58249

7590

04/30/2008

COOLEY GODWARD KRONISH LLP

ATTN: Patent Group

Suite 1100

777 - 6th Street, NW

WASHINGTON, DC 20001

EXAMINER

RAGHU, GANAPATHIRAM

ART UNIT

PAPER NUMBER

1652

MAIL DATE

DELIVERY MODE

04/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/990,874	<b>Applicant(s)</b> SUNG, WING L.	
	<b>Examiner</b> GANAPATHIRAMA RAGHU	<b>Art Unit</b> 1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2, 48, 61-66 and 72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Application Status***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/07/08 has been entered.

In response to the Final Office Action dated 09/07/2007 and an Advisory on 02/08/08, applicants' filed an RCE received on 03/07/08 is acknowledged. Said RCE cancelled claims 1, 4, 7, 9, 12-14, 18, 21-23, 30-32, 37, 39, 40, 41, 44, 56-60, 67 and 71 and added a new claim 72. Claims 2, 48, 61-66 and 72 are currently pending and are under consideration in the instant Office Action.

The terminal disclaimer filed on 03/17/08 disclaiming the terminal portion of instant application for the copending application US Application No.: 11/377,644 filed on 03/14/2006 which would extend beyond the expiration date of the instant application has been reviewed and is accepted. The terminal disclaimer has been recorded.

Objections and rejections not reiterated from previous action are hereby withdrawn.

***Withdrawn- Double Patenting rejection***

Previous rejection of claims 2 and 48 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-6 and 34-42 of US Application No.: 11/37,644 is withdrawn following the submission of a Terminal disclaimer on and amendments to claims 1, 2, 4-6 and 34-42 of US Application No.: 11/37,644.

***Maintained- Claim Rejections 35 USC § 112  
Enablement***

The text of those sections of Title 35, U.S. Code and the main body of the rejection not

Art Unit: 1652

included in this action can be found in a prior Office action dated 09/07/2007 and 02/08/2006.

Claims 2, 48, 61-66 and 72 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specific variants of *Trichoderma reesei* xylanase II consisting of a substitution at one or more positions as follows, a non-polar amino acid at position 116, a Cys at position 118, a basic amino acid at positions 144 and 161 of SEQ ID NO: 16, followed by modification of said variants at one or more other positions wherein said positions are limited to positions 10, 11, 27, 29, 75, 105, 125, 129 with specific amino acid residues of SEQ ID NO:16 i.e., specific amino acid substitutions to SEQ ID NO: 16 as recited in claim 72, such that said modified *Trichoderma reesei* xylanase II having thermophilic xylanase activity and a method of using said variant xylanase in pulp manufacturing (as in claim 48), does not reasonably provide enablement for any modified *Trichoderma reesei* xylanase II that exhibits improved thermophilicity in comparison to a corresponding *Trichoderma reesei* xylanase II comprising the amino acid sequence of SEQ ID NO: 16 and comprising any modification at position 116, 118, 144, 161 or a combination thereof. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

In support of their request that said rejection be withdrawn, applicants' provide the following arguments:

Applicants have amended the claims and added a new claim 72 that has reference to a parent sequence.

**Reply:** Claims as written when given the broadest interpretation reads on any modified *Trichoderma reesei* xylanase II that exhibits improved thermophilicity in comparison to a

Art Unit: 1652

corresponding *Trichoderma reesei* xylanase II comprising the amino acid sequence of SEQ ID NO: 16 and comprising any modification at position 116, 118, 144, 161 or a combination thereof and not limited to specific mutants of SEQ ID NO: 16. The preamble of the claim reads “A modified *Trichoderma reesei* xylanase II...” and thus can comprise a) any other sequence other than SEQ ID NO: 16 and b) the breadth encompassed as a result of the phrase “comprising” (open language) allows any number of additional changes, even if claims were clearly limited to variants of SEQ ID NO: 16. The requirements for inclusion of any modified *Trichoderma reesei* xylanase II enzymes are so broad, that claims still encompass number of variants and would be an undue burden to one skill in the art to make, identify variants with desired biological characteristics and use the variants for desired purposes. In addition, the specification has not provided structure-function correlation and tolerance of any modified xylanase to maintain the required configuration of the molecule and specific biological characteristics. Therefore, the specification does not provide support for the scope and breadth of the claims.

***Maintained-Written Description***

The text of those sections of Title 35, U.S. Code and the main body of the rejection not included in this action can be found in a prior Office action dated 09/07/2007 and 02/08/2006.

Claims 2, 48, 61-66 and 72 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In support of their request that said rejection be withdrawn, applicants' have provided the same argument that was presented to traverse the enablement rejection. However, examiner maintains the rejection and the reason for the examiner's position is given below.

**Reply:** Applicants' arguments are not persuasive as claim 1 as written is not limited to variants of *Trichoderma reesei* of SEQ ID NO: 16 nor to variants which must be *Trichoderma reesei* xylanase II. They are drawn to any variant of a *Trichoderma reesei* xylanase II having the recited features and thus the variant does not have to be specific amino acid substitutions to SEQ ID NO: 16 as recited in claim 72. Thus the claimed proteins in claims 2, 48, 61-66 and 72 can have any structure even structures with low percentage of similarity or even no similarity to SEQ ID NO: 16. The genus of polypeptides required in the claimed invention is an extremely large functionally variable genus. Many functionally unrelated polypeptides are encompassed by these claims with no structure-function correlation. Furthermore, it is well known in the art that structurally related molecules may not possess similar function including desired binding specificity for substrates and enzyme kinetics and conversely functionally similar molecules may not share similar structural features or significant homology. The specification discloses only specific variants of *Trichoderma reesei* xylanase II consisting of a substitution at one or more positions as follows, a non-polar amino acid at position 116, a Cys at position 118, a basic amino acid at positions 144 and 161 of SEQ ID NO: 16, followed by modification of said variants at one or more other positions wherein said positions are limited to positions 10, 11, 27, 29, 75, 105, 125, 129 with specific amino acid residues of SEQ ID NO:16 i.e., specific amino acid substitutions to SEQ ID NO: 16 as recited in claim 72 of the recited genus, which is insufficient to put one of ordinary skill in the art in possession of all attributes and features of all species

Art Unit: 1652

within the required genus, especially variants with unknown sequence homology or very low sequence homology to SEQ ID NO: 16 as said variants structure-function correlations are not disclosed. Therefore, given this lack of description of representative species encompassed by the genus of the claims, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the claimed invention.

Applicants are referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at [www.uspto.gov](http://www.uspto.gov).

#### ***Summary of Pending Issues***

The following is a summary of issues pending in the instant application.

- 1) Previous rejection of claims 2 and 48 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 4-6 and 34-42 of US Application No.: 11/37,644 is withdrawn following the submission of a Terminal disclaimer on and amendments to claims 1, 2, 4-6 and 34-42 of US Application No.: 11/37,644.
- 2) Claims 2, 48, 61-66 and 72 are rejected under 35 U.S.C. 112, first paragraph, for lack of enablement and written description.

#### ***Conclusion***

None of the claims are allowable. Claims 2, 48, 61-66 and 72 are rejected for the reasons identified in the Rejections and Summary sections of this Office Action. Applicants must respond to the objections/rejections in each of the sections in this Office Action to be fully responsive for prosecution.

***Final Comments***

To insure that each document is properly filed in the electronic file wrapper, it is requested that each of amendments to the specification, amendments to the claims, Applicants' remarks, requests for extension of time, and any other distinct papers be submitted on separate pages.

It is also requested that Applicants identify support, within the original application, for any amendments to the claims and specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathirama Raghu whose telephone number is 571-272-4533. The examiner can normally be reached between 8 am-4: 30 pm EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on 571-272-0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular communications and for After Final communications. Any inquiry of a general nature or relating to the status of the application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ganapathirama Raghu, Ph.D.  
Patent Examiner  
Art Unit 1652  
Apr. 05, 2008.

/Rebecca E. Prouty/  
Primary Examiner,  
Art Unit 1652